

WHAT IS CLAIMED IS:

1. An image processing device, comprising:

an input which receives a stereo pair of images;
a foreground extractor coupled to the input which
compares location of like pixel information in each image to
determine which pixel information is foreground pixel information
and which pixel information is background pixel information;
a DCT block classifier coupled to the foreground
extractor which determines which DCT blocks of at least one of
the images contain a threshold amount of foreground information;
and

an encoder coupled to the DCT block classifier which
encodes the DCT blocks having the threshold amount of foreground
information with a first level of quantization and which encodes
the DCT blocks having less than the threshold amount of
foreground information at a second lower quantization level.

2. The image processing device as claimed in claim 1, wherein
the stereo pair of images are received from a stereo pair of
cameras spaced closely from one another in a video conference
system.

3. The image processing device as claimed in claim 1, wherein
the foreground extractor computes the difference in location of
like pixels in each image and selects the foreground pixels as

4 those pixels whose difference in location falls above a threshold
5 distance.

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7 SUBP2

4. An image processing device, comprising:

8 an input which receives a stereo pair of images;

9 a foreground extractor which detects foreground pixel
10 information from the stereo pair of images; and

11 an encoder coupled to the foreground extractor which encodes
12 the foreground pixel information at a first high level of
13 quantization and which encodes background pixel information at a
14 second lower level of quantization. 2

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16 5. The image processing device as claimed in claim 4, wherein
17 the foreground extractor computes the difference in location of
18 like pixels in each image and selects the foreground pixels as
19 those pixels whose difference in location falls above a threshold
20 distance.

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22 6. The image processing device as claimed in claim 4, wherein
23 the foreground pixel information is defined in terms of entire 8
24 x 8 blocks of DCT coefficients.

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26 SUBP3 7. An image processing system, comprising:

27 a stereo pair of cameras for taking a stereo pair of images;

28 a foreground extractor which detects foreground pixel
29 information from the stereo pair of images; and 3

an encoder coupled to the foreground extractor which encodes the foreground pixel information at a first high level of quantization and which encodes background pixel information at a second lower level of quantization.

8. A method of encoding a stereo pair of images, comprising:
receiving the stereo pair of images;
extracting foreground information from the stereo pair of images; and
encoding the foreground information at a first higher quantization level and encoding background information of the stereo pair of images at a second lower quantization level.

9. The method in accordance with claim 8, wherein the step of extracting includes the following steps:

identifying the locations of like pixels in each of the stereo pair of images;

calculating the difference between the locations of like pixels; and

determining for each set of like pixels whether the difference between locations falls above a threshold difference, and if so identifying those pixels as foreground information.

10. The method in accordance with claim 8, wherein the encoding step encodes an entire 8 x 8 block of DCT coefficients as foreground information if at least a predetermined number of

56 foreground pixels are within the 8 x 8 block, otherwise the
57 entire 8 x 8 block of DCT coefficients is encoded as background
58 information.

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SUB 4 11. Computer-executable process steps to process image data from
60 a stereo pair of images, the computer-executable process steps
61 being stored on a computer-readable medium and comprising:
62 a foreground extracting step to detect foreground pixel
63 information from the stereo pair of images; and
64 an encoding step for encoding foreground pixel information
65 of at least one image at a first higher quantization level and
66 for encoding background pixel information of the at least one
67 image at a second lower quantization level.
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SUB A1 12. The computer-executable process steps as claimed in claim
69 11, wherein the foreground extracting step determines which 8 x 8
70 DCT blocks contain at least a predetermined amount of foreground
71 pixel information; and wherein the encoding step encodes the
72 entire 8 x 8 block of DCT coefficients at the first higher
73 quantization level if the 8 x 8 block of DCT coefficients
74 contains the predetermined amount of foreground pixel
75 information.
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79 13. The computer-executable process steps as claimed in claim 11
80 and 12, wherein the step of foreground extracting computes the
81 difference in location of like pixels in each image and selects

82 the foreground pixels as those pixels whose difference in
83 location falls above a threshold distance.

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85 ~~85~~ ^{BA2} 14. An apparatus for processing a stereo pair of images, the
86 apparatus comprising:

87 a memory which stores process steps; and

88 a processor which executes the process steps stored in the
89 memory so as (i) to extract foreground information from the
90 stereo pair of images and (ii) to encode the foreground
91 information at a first high level of quantization and to encode
92 background information at a second low level of quantization.

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94 15. An apparatus for processing a stereo pair of images, the
95 apparatus comprising:

96 a memory which stores process steps; and

97 a processor which executes the process steps stored in the
98 memory so as (i) to extract foreground information from the
99 stereo pair of images in the form of foreground 8 x 8 DCT blocks
100 of coefficients, and (ii) to encode the foreground 8 x 8 DCT
101 blocks of coefficients at a first high level of quantization and
102 to encode background 8 x 8 DCT blocks of coefficients at a second
103 lower level of quantization.

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105 16. An apparatus for processing a stereo pair of images, the
106 apparatus comprising:

107 a memory which stores process steps; and

108 a processor which executes the process steps stored in
109 memory so as (I) to calculate the difference in location of like
110 pixels in each image, (ii) if the difference in location is above
111 a set threshold the pixel information is identified as foreground
112 pixel information, if below the set threshold the pixel
113 information is determined to be background pixel information,
114 (ii) to determine whether each 8 x 8 DCT block contains a
115 particular amount of foreground pixel information and (iv) to
116 encode those 8 x 8 DCT blocks having at least the particular
117 amount of foreground information at a first higher level of
118 quantization and those 8 x 8 DCT blocks having less than the
119 particular amount of foreground information at a second lower
120 level of quantization.
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